**Problem statement** Suppose \( \alpha_n = \frac{1}{n^2} \) except when \( n \) is a square, and \( \alpha_n = \frac{1}{n^{3/2}} \) when \( n \) is a square. The series whose \( n^{th} \) term is \( \alpha_n \) is therefore:

\[
1 + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^{3/2}} + \frac{1}{5^2} + \frac{1}{6^2} + \frac{1}{7^2} + \frac{1}{8^2} + \frac{1}{9^{3/2}} + \ldots
\]

Does this series converge?

* This series occurs in a text first published in 1908 by Thomas John l’Anson Bromwich, M.A., Sc.D., F.R.S., “based on courses of lectures given at Queen’s College, Galway”. A knowledge of history is valuable for scholars in all fields!